

MEMO

From

Answering
Your Memo

Subject HYPODERMIC NEEDLE

The examination of the samples submitted demonstrated that the brass cap from the collapsible tube contained a fragment of a steel hypodermic needle and that this fragment was identical in every respect to the section of hypodermic needle submitted separately.

Spectrographic comparison showed that the relative amounts of residual impurities such as Cr, Ni, Mn, Cu, Mo, etc. are the same in the two sections. They were also found to be identical in outer diameter and structure as determined metallographically.

cc:

SPECIAL SAMPLES

DATE _____

NOVEMBER 5, 1951

W 51.538

SAMPLE 3-23 HYPODERMIC NEEDLES

REPORT BY

DATE _____

NOVEMBER 27, 1951

SAMPLE
NO 22

A

B

[illegible]

REPORT

November 21, 1951

 C

Metallographic study of Hypodermic Needle

A brass ferrule enclosing a rusted end of a hypodermic needle, and 1/4 inch piece cut from a separate one-inch length of a rusted hypodermic needle were mounted in bakelite, ground down to present a longitudinal section in the outer wall of the needle, and polished for metallographic examination.

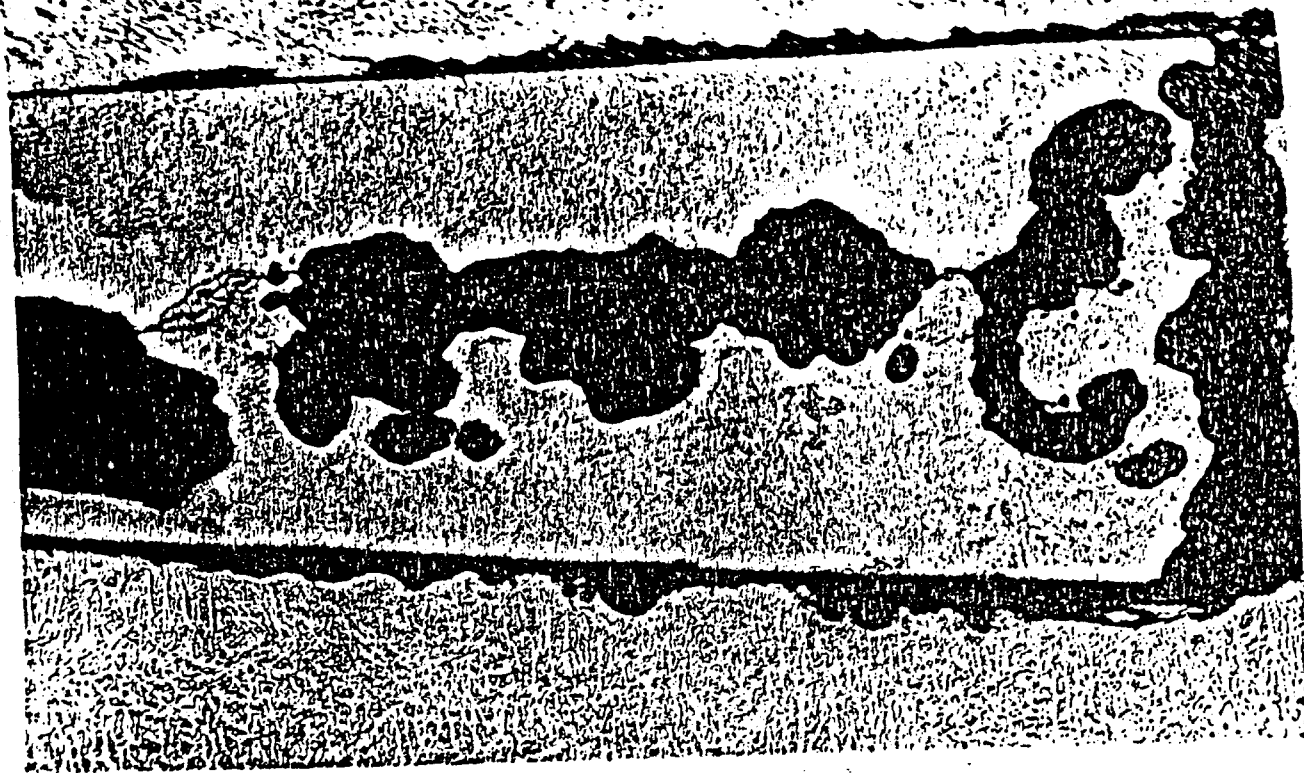
Both pieces of steel needle were observed to be of about the same diameter, but it was not possible to make measurements due to the rusted condition of the needle end encased in brass.

Description and micrographs are attached.

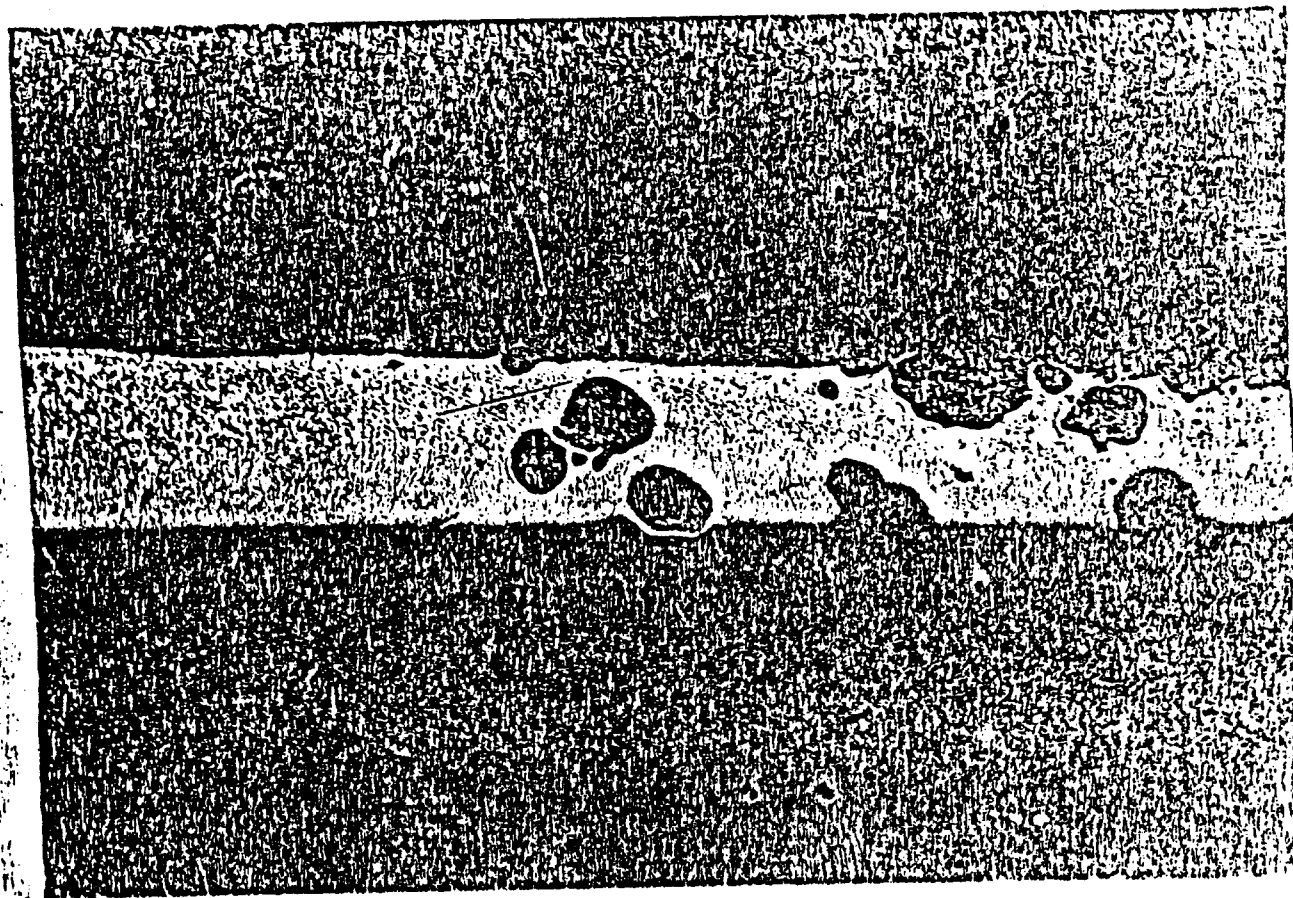
Respectfully submitted,

 C





6518



6519

Plate 6518

As polished

100x

Longitudinal section ground part way through the wall of a hollow steel needle encased in brass.

The black areas are voids due to holes rusted through the steel from inside toward the outside.

The brass appears above and below the needle.

Plate 6519

As polished

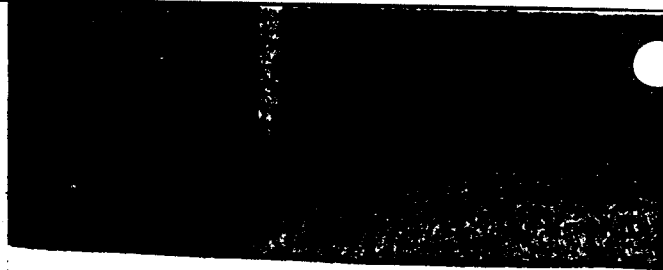
100x

Longitudinal section ground a very little way into the wall of a hollow steel needle.

The black areas are rust pits which attacked the outside of the needle.

This section is narrower than the one above only because grinding did not progress as far into the wall.

The inclusion pattern of this piece of steel needle, represented by the small black dots, is about the same as that in the brass-enclosed needle above.



C

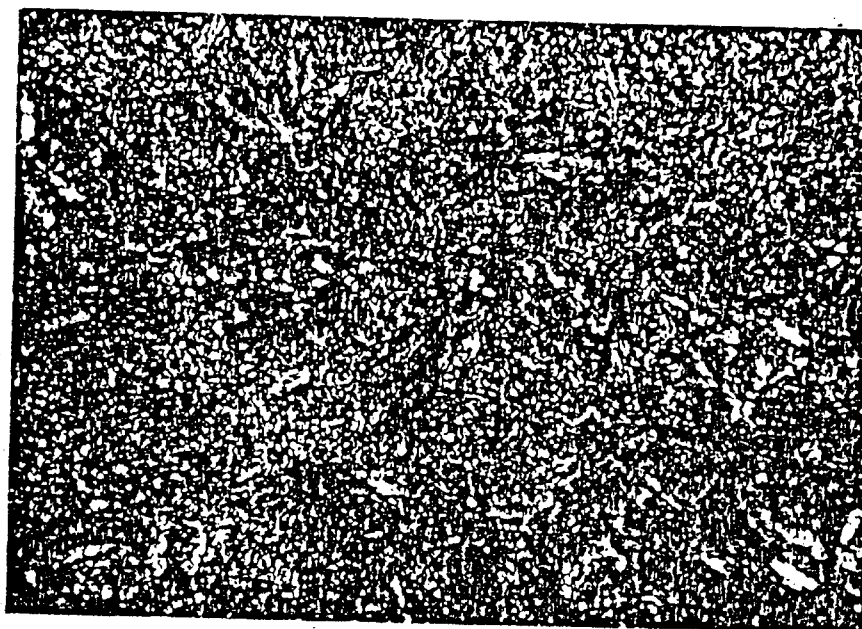


Plate 6521

Etched with Nital

1000X

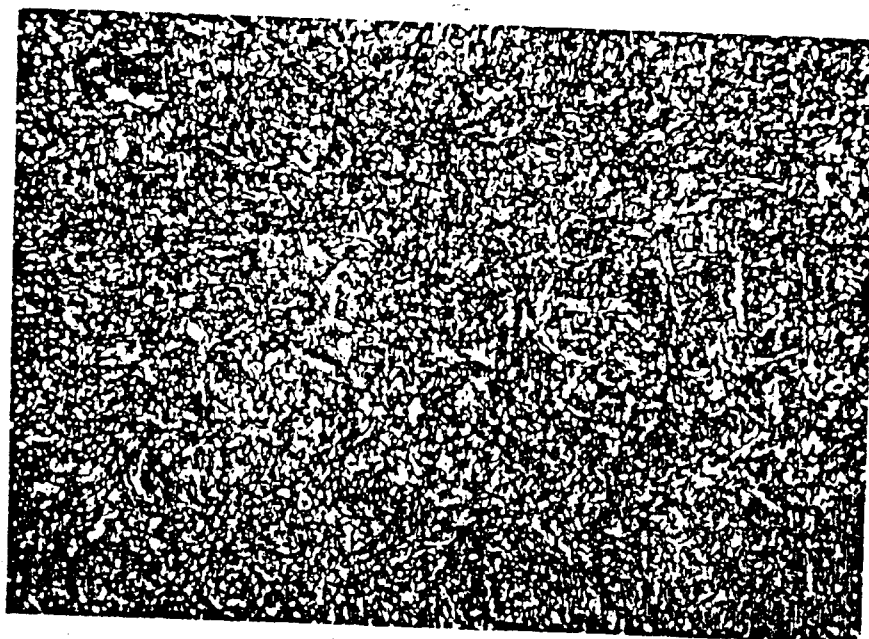


Plate 6520

Etched with Nital

1000 X

Plate 6521

Etched with Nital

1000x

Micrograph of etched microstructure of the needle enclosed in brass.

This structure consists of scattered spheroids of cementite in a matrix of tempered martensite. It is typical of a high carbon tool steel such as is usually used for hypodermic needles.

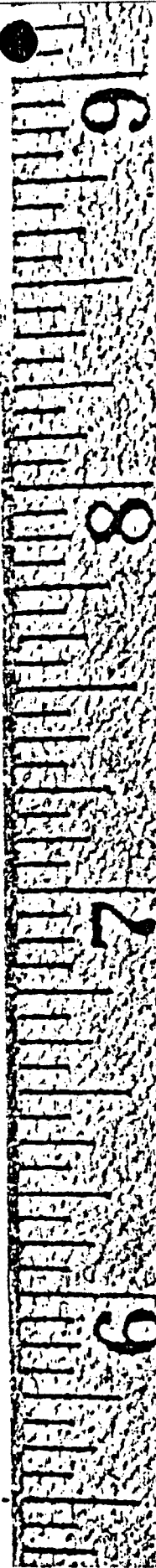
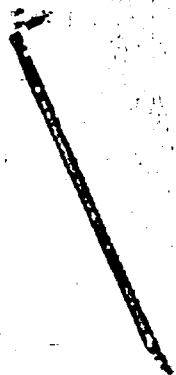
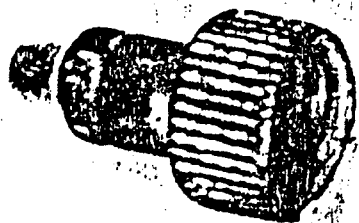
Plate 6520

Etched with Nital

1000x

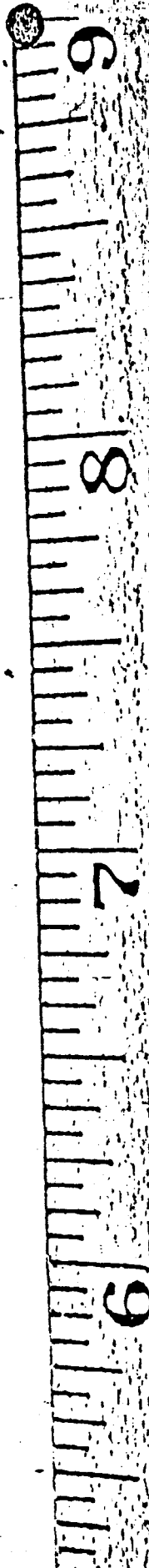
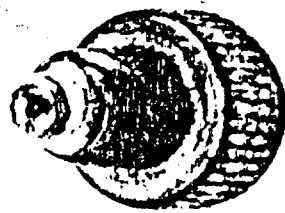
Micrograph of etched microstructure of the separate piece of needle.

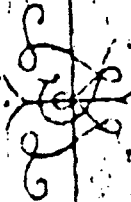
This also consists of scattered spheroids of cementite in a matrix of tempered martensite.



RULER

WESTCOTT



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